HUNTER'S ARMY AND TRAVELERS' COMPASS.

The accompanying engraving represents a pocket compass with a floating card of mother of pearl, one of which is stained black with the exception of the star lines, which are white on the black and black on the white section. The object of thus making the card is to enable the compass to be used at night as well as by day, by military parties and travelers. The highly reflecting qualities of the white mother of pearl and the strongly contrasting surfaces of the north and south sections of the card enable the points to be read off with facility.

Ship compasses are formed with floating paper cards. The magnetic needle is cemented on the underside of the card, and it is pivoted at the center upon a vertical point. The needle is thin and flat bushed at the center usually with a ruby. A ship's compass card is not made with strongly contrasting north and south surfaces, therefore a light is required to read it at night. Pocket and surveyors' compasses have hitherto been made without floating cards. The card is either fixed on the bottom of the case or the index is painted on it, and the needle exposed. Such pocket compasses cannot be used at night without much inconvenience. To permit this new compass to be

carried in the pocket, and prevent undue wear of the setting, the card is raised off the vertical pivot when not used, by a small arm, which is bifurcated at the center, under the card, and its nib, *a*, extends to the outside of the case. The slide, *b*, when pushed to the one side, acts on an inclined plane, and presses down the nib, *a*, raising the card from its pivot. In using this compass the slide, *b*, is pushed to the right and the nib, *a*, released; the card then drops on its pivot; the needle vibrates for a short period, when it settles at a point north and south. In taking an observation the card is held steady by a catch plate, which is operated by pressing with the finger on the nib, *c*. Major Myer, signal officer in the army, has used one of them, and says respecting it:—"I find that it can be read much more easily at night than any other compass I have seen." This claim is for the floating card formed with strongly contrasting surfaces, thus rendering it a night as well as a day compass, as described.

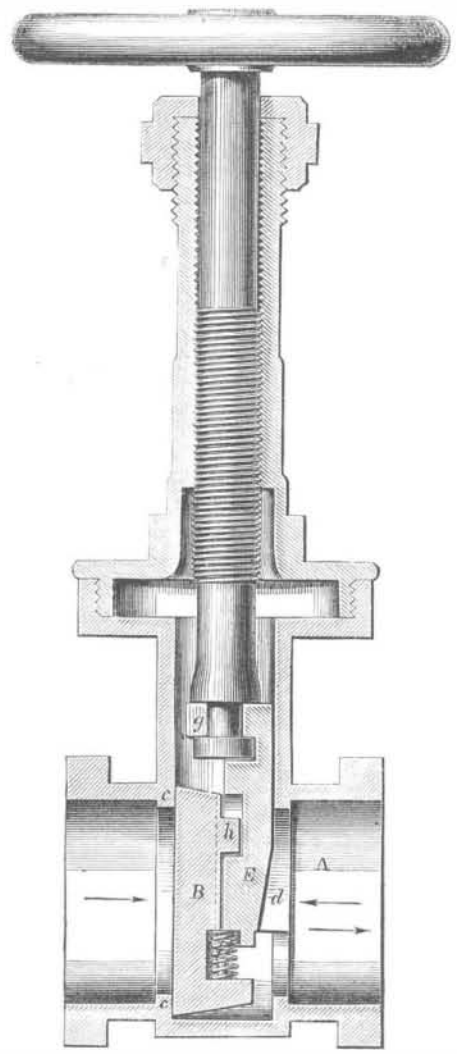
Patented May 6, 1862, by H. W. Hunter, optical and philosophical instrument maker, 169 William street, this city.

Wrought-Iron Rifled Cannon.

We understand that between 300 and 400 wrought-iron rifled cannon have been supplied to the government by the Phenix Iron Co., Phenixville, Pa., made under the patent of J. J. Griffin, the superintendent of the works. The peculiarity of this process consists in the manner of making the fagot or pile, and in rolling it into gun blocks between cylindrical rollers. By this mode the evils, affecting the quality of the iron, encountered in the old method of forging large masses of iron, are entirely avoided. When finished, the fibers of the iron are found lying around the longitudinal bars which form the bore of the gun, thus insuring the greatest possible resistance, of which the metal is capable, to the force of the powder on the discharge of the piece. It is in reality a Stub and Twist cannon, possessing the strength and endurance of the Stub and Twist fowling piece. The 3-inch guns adopted by the government weigh about 820 lbs. each, and take a shell of 10 to 12 lbs. The vents, in order to protect the iron from the deteriorating action of the ignited powder, are bushed with hammered copper. According to tests made at Fortress Monroe, the endurance of Griffin's gun was found to be greater than that of the bronze pieces.

LUDLOW'S SLIDING STOP VALVE.

The accompanying engravings represent a sliding valve in which there is no friction between the valve and its seat, and which closes the pipe perfectly tight. This is effected by forcing a wedge behind the valve to press it firmly against its seat; the wedge being loosened before the valve is withdrawn.



A vertical section of the apparatus is shown in Fig. 1. A is the pipe through which the water flows from left to right as indicated by the arrows. B is the valve, ground to fit its face, *c c*. The rear of the valve box is formed with two wedge-shaped projections, *d d*, shown clearly in perspective in Fig. 2.

Fig. 2

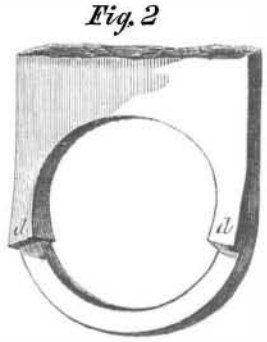
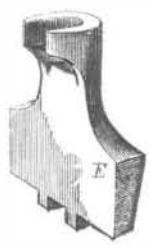


Fig. 3



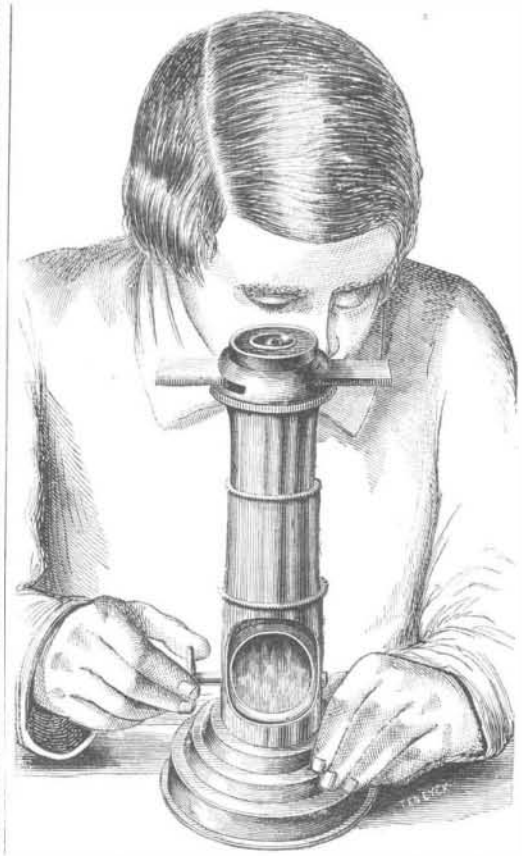
Between these projections and the valve is the wedge, E, represented in perspective in Fig. 3. This wedge terminates at its upper end in part of a ring, or jaws for seizing the lower end of the valve stem by a recess, *g*, as shown in Fig. 1. The valve stem raises and lowers the wedge, and through this means only acts upon the valve. Upon the back of the valve is formed a lug, *h*, which enters an elongated recess in the wedge, and by this arrangement the wedge is permitted to move upward a certain distance before it begins to raise the valve. This loosens the wedge and allows the valve to fall back a little from its seat before it begins to move, thus preventing any friction between the valve and its seat. In closing the valve, as the wedge, E, is lowered, the valve, B, falls into place by its own gravity, when, the continued descent of the wedge, causing it to enter between the valve and the projections, *d d*, will press the valve against its seat, and close the passage.

To make sure of the descent of the valve into its place, a spring, *i*, is introduced beneath the lower end of the wedge, to press the valve downward. This spring is absolutely necessary when the valve closes upward, and the inventor prefers to employ it in all cases.

The patent for this invention was granted through the Scientific American Patent Agency, September 17, 1861, and further information in relation to it may be obtained by addressing the inventor, H. G. Ludlow, 2d, at Waterford, N. Y.

THE CRAIG MICROSCOPE.

The annexed engraving represents a microscope



patented by Henry Craig, of Cleveland, Ohio. It has but one lens, and therefore requires no adjustment of focus. The lens is mounted in an india-rubber disk, at the upper end of a brass tube, and the tube is provided with a mirror hung in an opening near its lower end to reflect the light upward through its axis. It is also divided by a perforated diaphragm with a small hole through the center to prevent the interference of straggling rays. A slit is made through the tube just below the lens for the insertion of the object slides.

These microscopes render the blood and milk globules, as well as some of the animalcules of stagnant water, visible, and they are sold for $2 each, or sent by mail for $2 25.

The patent for this invention was granted Feb. 18, 1862, and further information in relation to it may be obtained by addressing Henry Craig, at Cleveland, Ohio, or at 182 Centre street, New York.

M. Genin lately addressed the Academie des Sciences on the subject of "the Sex of Eggs." He affirms that he is now able, after having studied the subject for upward of three years, to state with assurance that all eggs containing the germ of males have wrinkles on ther smaller ends, while female eggs are smooth at the extremities.

Van Dewater's Water Wheel.—Since publishing the engraving of Van Dewater's water wheel in our issue of April 12, Mr. Van Dewater has changed his residence to Conquest, Cayuga Co., N. Y., to which latter place he would like his letters addressed.